What is claimed is:

1. A method for fabrication of microelectromechanical systems (MEMS) integrated micro devices, the method comprising:

micromachining an array of first three-dimensional micromechanical device features in a first silicon wafer;

micromachining an array of second three-dimensional micromechanical device features in a second silicon wafer, the second three-dimensional micromechanical device features being configured to cooperate with the first three-dimensional micromechanical device features when joined therewith;

mutually aligning the first and second arrays of device features;

permanently joining the first and second arrays of device features into an array of integrated micro devices as a function of permanently joining the first and second silicon wafers into a single composite wafer; and

subsequently separating the array of integral devices into individual devices each having a set of the first and second device features.

2. The method of claim 1 wherein micromachining an array of first three-dimensional micromechanical device features in a first silicon wafer further comprises micromachining an array of both partial and complete stand-alone three-dimensional micromechanical device features; and

micromachining an array of second three-dimensional micromechanical device features in a second silicon wafer further comprises micromachining an array of both partial and complete stand-alone three-dimensional micromechanical device features, the partial device features in the second silicon wafer being configured to be joined with the partial device features in the first silicon wafer.

3. The method of claim 2 wherein permanently joining the first and second arrays of device features into an array of integrated micro devices further comprises joining the partial device features in the first and second silicon wafers into complete composite device features.

4. The method of claim 3 wherein micromachining an array of both partial and complete stand-alone three-dimensional micromechanical device features in a first silicon wafer further comprises micromachining an array of first partial proof masses each connected to a first partial frame by one or more complete stand-alone flexures; and

micromachining an array of both partial and complete stand-alone three-dimensional micromechanical device features in a second silicon wafer further comprises micromachining an array of second partial proof masses each connected to a second partial frame by one or more complete stand-alone vibratory beams; and

wherein the first and second partial proof masses and the first and second partial frames are mutually configured and arranged relative to the first and second wafers for permanently joining into an array of composite stand-alone three-dimensional micromechanical device features having a composite proof mass each connected to a composite frame by the one or more flexures and the one or more vibrating beams.

5. The method of claim 4 wherein machining the first partial frames further comprises machining a relief arranged to cooperate with each of the one or more vibrating beams.

6. The method of claim 4, further comprising:

determining for a plurality of the first wafers a minimum yield of the first three-dimensional micromechanical device features micromachined therein;

determining for a plurality of the second wafers a minimum yield of the second three-dimensional micromechanical device features micromachined therein; and

wherein each of mutually aligning the first and second arrays of device features and permanently joining the first and second arrays of device features into an array of integrated micro devices further comprises using one of the first wafers determined to have a minimum yield of the first three-dimensional micromechanical device features micromachined therein and one of the second wafers determined to have a minimum yield of the second three-dimensional micromechanical device features micromachined therein.

7. The method of claim 4, further comprising providing means for vibrating each of the one or more vibratory beams at a respective resonant frequency when the composite proof mass is at rest.

8. A method for fabrication of microelectromechanical systems (MEMS) integrated micro devices, the method comprising:

forming an array of first three-dimensional micromechanical device features in each of a plurality of first silicon wafers each having top and bottom substantially parallel surfaces spaced apart by a thickness of the first silicon wafer material;

applying a first alignment mark to a face of each of the first wafers relative to the array of first device features;

in each of a plurality of second silicon wafers each having top and bottom substantially parallel surfaces spaced apart by a thickness of the second silicon wafer material, forming an array of second three-dimensional micromechanical device features that includes one or more device features that are different from one or more of the first device features formed in the first wafers and are configured to cooperate with different ones of the first device features formed in the first wafers;

applying a second alignment mark to a face of each of the second wafer relative to the array of second device features;

preparing one of each of the first and second wafers for wafer bonding;

mutually aligning the first and second wafers as a function of aligning the respective first and second alignment marks;

permanently bonding the first and second wafers into a single composite wafer having the first device features formed in the first wafer permanently bonded to the second device feature in the second wafer configured to cooperate therewith.

9. The method of claim 8 wherein permanently bonding the first and second wafers into a single composite wafer further comprises high-temperature silicon fusion bonding the first and second wafers.

10. The method of claim 8 wherein:

forming an array of first three-dimensional micromechanical device features in the first silicon wafers further comprises forming an array of first three-dimensional proof masses suspended for motion relative to first frames by one or more flexures;

forming an array of second three-dimensional micromechanical device features in the second silicon wafers further comprises forming an array of second three-dimensional proof masses suspended relative to second frames by one or more vibratory beams; and

permanently bonding the first and second wafers into a single composite wafer further comprises permanently bonding respective first and second three-dimensional proof masses into single composite three-dimensional proof masses, and permanently bonding respective first and second three-dimensional frames into single composite three-dimensional frames suspended from respective composite proof masses by respective flexures and coupled thereto by respective vibratory beams.

11. The method of claim 10, further comprising forming a plurality of electrical conductors over each of the vibratory beams, including wire bond pads electrically coupled to the electrical conductors.

12. A composite microelectromechanical system (MEMS) integrated micro acceleration sensor, comprising a substrate having formed therein a proof mass suspended from a frame by a flexure and a vibratory beam coupled between the proof mass and frame, wherein:

at least one of the proof mass and the frame further comprises a composite of two or more substrates, and

at least one of the flexure and the vibratory beam is formed complete in a single one of the two or more substrates.

13. The acceleration sensor of claim 12 wherein the flexure is formed complete in a single one of the two or more substrates.

14. The acceleration sensor of claim 12 wherein the vibratory beam is formed complete in a single one of the two or more substrates.

15. The acceleration sensor of claim 12 wherein the flexure is formed complete in a single one of the two or more substrates, and the vibratory beam is formed complete in a different single one of the two or more substrates.

16. The acceleration sensor of claim 15 wherein both the proof mass and the frame further comprises a composite of two or more substrates.

17. The acceleration sensor of claim 16, further comprising means for causing the vibratory beam to vibrate at a resonant frequency when the composite proof mass is at rest relative to the composite frame.

18. A composite microelectromechanical system (MEMS) integrated micro acceleration sensor, comprising:

first and second silicon substrates each having top and bottom substantially parallel surfaces spaced apart by the thickness of the silicon substrate material;

a composite proof mass partially formed in each of the first and second substrates and permanently joined together;

a composite frame partially formed in each of the first and second substrates and permanently joined together;

a flexure suspending the composite proof mass for movement relative to the composite frame;

a vibratory beam coupled between the composite proof mass and the composite frame;

electrical means for vibrating the vibratory beam at a resonant frequency when the composite proof mass is at rest relative to the composite frame; and

electrical means for receiving a signal representative of a variation in the resonant frequency of the vibrating beam as a function of tension or compression forces being applied by movement of the composite proof mass relative to the composite frame.

19. The acceleration sensor of claim 18 wherein the flexure suspending the composite proof mass from the composite frame further comprises a flexure being completely formed in one of the first and second substrates integrally with one portion of the composite proof mass and integral with one portion of the composite frame.

20. The acceleration sensor of claim 18 wherein the vibratory beam coupled between the composite proof mass and the composite frame further comprises a vibratory beam being completely formed in one of the first and second substrates integrally with one portion of the composite proof mass and integral with one portion of the composite frame.